

## **REMARKS/ARGUMENTS**

The second complete paragraph on page 5 of the original specification of the specification has been amended to correct a typographical error in the chemical name of examples of component (B). No new matter has been added.

Independent claim 1 recites that the amount of PPE is 0. Independent claim 8 recites that the amount of the component (B) is 0.5 to 2 parts by weight. Previously presented independent claim 16 is directed to compositions which contain 0.5 to 20 parts by weight of component (B) and an amount of PPE up to 10 parts by weight. New claims 25 to 29 recite the particle size of the rubber in the rubber modified polystyrene when PPE is included (see page 7, lines 8-10 of the specification). Support for the amendments is in the specification and the examples. No new matter has been added.

Applicants enclose an Information Disclosure Statement and fee. The published application listed on the form 1449 is commonly owned with the present application. Applicants submit that the claims are in conformity with 35 U.S.C. §112.

### **Status of the Claims**

Claims 1, 5, 8, 14 - 20, 23, and 24 - 29 are pending and under consideration. Claims 2-4, 6, 7, 9-13, 21, and 22 have been cancelled without prejudice.

### **Statement of the Rejections**

**Claims 1, 5, 8, 14 - 20, 23 and 24 stand rejected under 35 U.S.C. 102(b) as being anticipated by BASE DE 4209029, Trivedi 4,459,381 or Notorgiacomo, Jr. 5,030,674, with Taubitz et al. 4,618,633, Muench et al. 4,632,946 and Blount 6,054,515 used as evidence.**

BASF discloses compositions containing 5-90 wt.% PPE, 5-94 wt% impact modified vinyl aromatic polymer, and 1-30 wt.% of a flame retardant additive. Antiblaze 19 is disclosed among several other compounds as possible flame retardants. There is no disclosure of any compositions containing Applicants' component (B) flame retardant.

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Paper dated May 8, 2007  
Reply to Office action mailed April 9, 2007

Trivedi teaches high impact polymethylstyrene and Antiblaze-19. Impact polystyrene is disclosed in the examples with 5% and 10% Antiblaze. The composition with 5% Antiblaze burns. There is no disclosure of PPE in the reference.

Notorgiacomo, Jr. discloses compositions of polymers of carbon monoxide and an olefin. Cyclic phosphonates are disclosed as flame retardants for the compositions. Among the flame retardants, the reference discloses masterbatched Antiblaze and HIPS with a weight ratio of ester to polymer in the range of 90:10 to 10:90. In the examples, a masterbatch of a mixture of 75 /25 Antiblaze /HIPS is used in a composition of a terpolymer of carbon monoxide, ethylene, and propylene. There is no disclosure of any PPE in the compositions of the reference.

The secondary references are relied upon for the disclosure of the chemical identity of Antiblaze. The Examiner had taken the position that "Applicants' claims are not novel".

**Claims 1, 5, 8, 14 - 20, 23 and 24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over BASF DE 4209029, Trivedi 4,459,381 or Notorgiacomo, Jr. 5,030,674, in view of Taubitz et al. 4,618,633, Muench et al. 4,632,946 and Blount 6,054,515.**

Based on the teachings of the references as discussed previously, the Examiner has taken the position that "[I]t would have been obvious to one having ordinary skill in the art; at the time the invention was made, to select applicants' ingredients from a list of equivalents.

#### **Applicants' Traversal**

Applicants traverse the rejections and respectfully request reconsideration in view of the following discussion.

**Claims 1, 5, 8, 14 - 20, 23 and 24 are not anticipated by BASF, Trivedi or Notorgiacomo because the references do not disclose all elements of the claims as arranged in the claims.**

The references cited by the Examiner do not contain any specific disclosure of any compositions which contain the components recited in the present claims in the amounts recited in the present claims. The standard for anticipation is one of strict identity. To anticipate a claim for a patent, a single prior source must contain all its essential elements as arranged in the claims. The recitation of Applicants' components or amounts thereof in a broad range does *not* support anticipation under U.S. patent practice.

It is noted that Applicants' impact polystyrene is not the same as the impact polymethylstyrene of Trivedi which uses each in different examples showing that the impact polystyrene compositions burn while the polymethylstyrene compositions do not burn. The examples in Trivedi which use impact polystyrene do not contain any PPE. The lowest amount of Antiblaze in the impact polystyrene examples of Trivedi is 5% which is outside the range of 0.5 to 2 parts of component (B) in claims 1 and 8 which is less than 5% of the composition.

It is a well-established principle of U.S. patent law that: "[I]t is not sufficient that each element be found somewhere in the reference, the elements must be arranged as in the claim." *Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Co.*, 730 F.2d 1452, 1458 (Fed. Cir. 1984). The elements must be arranged as required by the claim, . . . *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990). *Richardson v. Suzuki Motor Co., Ltd.*, 868 F.2d 1226, 1236-37, 9 USPQ2d 1913, 1920-21 (Fed. Cir. 1989), cert. denied, 493 U.S. 853 (1989) ("Every element of the claimed invention must be literally present, arranged as in the claim.") *Brown v. 3M*, 265 F.3d 1349, 1351, 60 USPQ2d 1375 (Fed. Cir. 2001), cert. denied, 122 S. Ct. 1436 (2002) ("To anticipate, every element and limitation of the claimed invention must be found in a single prior art reference, arranged as in the claim.")

As cited in the MPEP, “[A] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the . . . claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). “. . . exclusion of a claimed element from a prior art reference is enough to negate anticipation by that reference”. *Atlas Powder Co. v. E.I. du Pont de Nemours & Co.*, 750 F.2d 1569, 1574, 224 USPQ 409, 411 (Fed. Cir. 1984)

In order to obtain Applicants’ claimed compositions, one skilled in the art would have to omit components required by BASF DE, i.e., PPE in connection with the claims specifying 0% PPE. With regard to claims which can include PPE, it is noted that none of the examples of the reference disclose the use of Antiblaze. One skilled in the art would have to select component (B) from a list of several different flame retardants and then select amounts of component (B) from a disclosure of a broad range. With regard to Trivedi and Notorgiacomo, one skilled in the art would have to add PPE or use amounts of Antiblaze which are not disclosed in the references. The need for such additions or selection proves that the references do not meet the requirements under established U.S. patent law for anticipation of Applicants’ claims.

**The Examiner has not established a prima facie case of obviousness of claims 1, 5, 8, 14 - 20, 23 and 24.**

#### Requirements For Prima Facie Case of Obviousness

When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

- (A) The claimed invention must be considered as a whole;
- (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;
- (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and

- (D) Reasonable expectation of success is the standard with which obviousness is determined.

*Hodosh v. Block Drug Co., Inc.*, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

MPEP §2143 states the basic requirements of a *prima facie* case of obviousness citing supporting case law:

1. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one skilled in the art to modify the references or combine reference teachings. (see MPEP §2143.01)
2. There must be a reasonable expectation of success. (see MPEP §2143.02)
3. The prior art reference (or references when combined) must teach or suggest all of the claim limitations. (see MPEP §2143.03)

The fact that references can be modified or combined is *not* sufficient to establish *prima facie* obviousness. (MPEP §2143.01).

#### **Differences Between the Prior Art and the Claimed Invention**

The factual inquiries for establishing a background for determining obviousness under 35 U.S.C. 103(a) are set forth in set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966) and include determining the scope and contents of the prior art and ascertaining the differences between the prior art and the claims.

Claims 1, 5, and 23 are directed to compositions which contain 0% PPE whereas BASF DE requires a PPE component. Claims 14-20, and 27-29 require an amount of PPE up to 10 parts. Trivedi and Notorgiacomo do not disclose the use of PPE in the compositions disclosed therein. Claims 8, 14, 15, and 24 - 26 recite that the amount of the cyclic phosphonate is from 0.5 to 2 parts which is less than the amounts taught by Trivedi. Neither Notorgiacomo nor Trivedi disclose Antiblaze in the range of 0.5 to 2 parts by weight with impact polystyrene. The range in Notorgiacomo cited by the Examiner relates to the amount of flame retardant in the carbon monoxide-olefin polymer, not the impact polystyrene. Although a broad range of 1-30% is disclosed in BASF DE, the examples do not use an amount within the range of 0.5 to 2 parts.

The polystyrene of Applicants' claims is not the same as the polymethylstyrene disclosed in Trivedi which shows different results from using polystyrene instead of polymethylstyrene.

**There is no motivation or suggestion 1) to omit PPE in the compositions of BASF DE or 2) use less than 5% of cyclic phosphonate flame retardants in compositions of Trivedi or Notorgiacomo**

Claims 1, 5, and 23 specify that there is 0% PPE in the claimed compositions. There is nothing in BASF DE which teaches or suggests the omission of PPE from the compositions disclosed therein. Therefore, one skilled in the art would not be motivated to omit PPE from the compositions of the reference.

Neither Trivedi nor Notorgiacomo disclose the use of PPE in their disclosed compositions. There is nothing in the references which would motivate one skilled in the art to include PPE. Applicants' claims 1, 5, and 23 also recite that the amount of the cyclic phosphonate is from 0.5 to 2 parts which is less than the amounts taught by Trivedi. As noted previously, The range in Notorgiacomo cited by the Examiner relates to the amount of flame retardant in the carbon monoxide-olefin polymer, not the impact polystyrene.

Trivedi teach that compositions containing 5% Antiblaze (cyclic phosphonate) in impact polystyrene actually burn right away during flame retardance tests. Therefore, Trivedi teaches away from using 5% or less of cyclic phosphonate with impact polystyrene. As noted previously, compositions containing cyclic phosphonate and polymethyl styrene do not give the same results as compositions with impact polystyrene as shown by the different results shown in Trivedi.

Notorgiacomo discloses a broad ratio of flame retardant to polymer in the masterbatching from 90:10 to 10:90. Claims 1, 5, and 23 recite an amount of cyclic phosphonate which is outside this range.

**The references do not provide a sufficient basis for a reasonable expectation of success with regard to claims 1, 5, and 23.**

BASF DE requires the use of PPE so there is not reasonable expectation of success in omitting PPE in the compositions of the reference. Trivedi discloses that the use of 5% of cyclic phosphonate in a composition with impact polystyrene does not have adequate flame retardance. The composition burned. Therefore, there is no reasonable expectation of success in using less than 5% cyclic phosphonate in the compositions of BASF DE, Trivedi or in the masterbatched cyclic phosphonate of Notorgiacomo.

**One skilled in the art would not be motivated to use 5% or less of cyclic phosphonate flame retardants in compositions of BASF DE, Trivedi, Notorgiacomo with the amount of cyclic phosphonate set forth in Applicants' claims.**

Claims 16-20 and 27-29 require an amount of PPE in the claimed compositions which is less than or equal to 10 parts and the amount of the cyclic phosphonate is from 0.5 to 20 parts by weight. The claims do not include compositions which do not contain PPE.

BASF DE disclose the use of a broad range of 5 to 90% PPE. Applicants' claimed compositions are limited to 10 parts of PPE since larger amounts reduce the flowability of the compositions which makes it difficult to obtain dripping flame-retardance. Furthermore, BASF DE discloses the use of cyclic phosphonates as being equivalent to known phosphonate flame retardants. In the Examples, Applicants have shown in Table 2 that triphenylphosphate in compositions with or without PPE fail the flame retardance test. Applicants submit that such a result would not be expected from the disclosure of BASF DE which teaches that Antiblaze is equivalent to other phosphonate flame retardants.

Neither Trivedi nor Notorgiacomo teach or suggest the use of PPE in the compositions disclosed therein. The addition of PPE would be expected to decrease the flowability of the compositions since PPE has less flowability than impact polystyrene. There is nothing in the references that would motivate one skilled in the art to add PPE to the compositions.

**The references do not provide a sufficient basis for a reasonable expectation of success with regard to claims 16-20 and 27-29.**

Neither Trivedi nor Notorgiacomo teach or suggest the use of PPE in the compositions disclosed therein. Since PPE would be expected to decrease the flowability of the compositions of Trivedi and Notorgiacomo as well as other properties, Applicants submit that there is no evidence or technical reasoning in the record to support a reasonable expectation of success.

Applicants comparative tests show that triphenylphosphate in compositions with or without PPE fail the flame retardance test. Applicants submit that such a result would not be expected from the disclosure of BASF DE which teaches that Antiblaze is equivalent to other phosphonate flame retardants.

**There is no motivation or suggestion to use less than 5% of cyclic phosphonate flame retardants in compositions of BASF DE, Trivedi or Notorgiacomo**

Claims 8, 14, 15, and 24 - 26 recite that the amount of the cyclic phosphonate is from 0.5 to 2 parts which is less than the amounts taught by Trivedi. As noted previously, The range in Notorgiacomo cited by the Examiner relates to the amount of flame retardant in the carbon monoxide-olefin polymer, not the impact polystyrene. Notorgiacomo discloses a broad ratio of flame retardant to polymer in the masterbatching from 90:10 to 10:90. The range of 0.5 to 2 parts of the cyclic phosphonate of the claims is outside the range of the reference. BASF DE discloses a broad range of 1-30 wt. % of flame retardant.

Trivedi teach that compositions containing 5% Antiblaze (cyclic phosphonate) in impact polystyrene actually burn right away during flame retardance tests. Therefore, Trivedi teaches away from using 5% or less of cyclic phosphonate with impact polystyrene. As noted previously, compositions containing cyclic phosphonate and polymethyl styrene do not give the same results as compositions with impact polystyrene as shown by the different results shown in Trivedi.



Applicants submit that one skilled in the art would not be motivated to use Applicants' amount of cyclic phosphonate in the compositions of either BASF DE or Trivedi since Trivedi teaches that use of 5% of cyclic phosphonate is not sufficient to prevent burning in a composition with impact polystyrene.

With regard to claims 14, 15, 25, and 26 which recite an amount of PPE, Applicants submit that there is nothing in Trivedi or Notorgiacomo which would motivate one skilled in the art to add PPE to the compositions of the references. As discussed previously, the addition of PPE would be expected to decrease the flowability of the compositions since PPE has less flowability than impact polystyrene. There is nothing in the references that would motivate one skilled in the art to add PPE to the compositions.

**The references do not provide a sufficient basis for a reasonable expectation of success with regard to claims 8, 14, 15, and 24 - 26**

The amount of cyclic phosphonate in Notorgiacomo is outside the range of the compositions of the claims. Trivedi discloses that the use of 5% of cyclic phosphonate in a composition with impact polystyrene is not sufficient to prevent burning. Therefore, there is no reasonable expectation of success in using 5% or less than 5% cyclic phosphonate in the compositions of BASF DE, Trivedi or in the masterbatched cyclic phosphonate of Notorgiacomo.

Claims 14, 15, 25, and 26 recite an amount of PPE in the claimed compositions, Applicants submit that neither Trivedi nor Notorgiacomo teach or suggest the use of PPE in the compositions disclosed therein. Since PPE would be expected to decrease the flowability of the compositions of Trivedi and Notorgiacomo as well as other properties, Applicants submit that there is no evidence or technical reasoning in the record to support a reasonable expectation of success.

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**The references do not support a *prima facie* case of obviousness for the independent claims and therefore the dependent claims are patentable over the prior art.**

The dependent claims are directed to particular embodiments of the claimed compositions. For the reasons set forth previously, the references cited by the Examiner do not support a *prima facie* case of obviousness for the independent claims. Therefore the references do not support a *prima facie* case of obviousness against the dependent claims.

New claims 25 to 29 are directed to compositions containing PPE wherein the particle size of the rubber in component (A) is from 0.5 to 2.0µm. The arguments presented for the relevant independent claims apply to the dependent claims. The references do not disclose or suggest the use of rubbers having such particle sizes with the other components of Applicants' claims in the amounts recited therein.

Applicants submit that a review of the prior art of record as a whole shows that the claims in the present application meet the requirements for patentability. It is respectfully requested that the Examiner reconsider his rejections of the claims and allow claims 1, 5, 8, 14 - 20, 23, and 24-29.

Respectfully submitted,

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